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**From:** Jeff Heimerman  
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## TechDirect, February 1, 2015

Welcome to TechDirect! Since the January 1 message, TechDirect gained 322 new subscribers for a total of 34,565. If you feel the service is valuable, please share TechDirect with your colleagues. Anyone interested in subscribing may do so on CLU-IN at <http://clu-in.org/techdirect>. All previous issues of TechDirect are archived there. The TechDirect messages of the past can be searched by keyword or can be viewed as individual issues.

TechDirect's purpose is to identify new technical, policy and guidance resources related to the assessment and remediation of contaminated soil, sediments and groundwater.

Mention of non-EPA documents or presentations does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the TechDirect audience.

### > Funding Opportunity

**FY 2016 ESTCP Solicitation Released.** The Department of Defense's (DoD) Environmental Security Technology Certification Program (ESTCP) is seeking proposals for innovative environmental technology demonstrations as candidates for funding beginning in FY 2016. Researchers from Federal organizations, universities, and private industry can apply for ESTCP funding. ESTCP projects are formal demonstrations in which innovative technologies are rigorously evaluated. ESTCP demonstrations are conducted at DoD facilities and sites to document improved efficiency, reduced liability, improved environmental outcomes, and cost savings. All pre-proposals are due by March 12, 2015. Details for both DoD and Non-DoD submissions, as well as a recording of the January 16 webinar presented by the ESTCP Director and Deputy Director are available at <https://serdp-estcp.org/Funding-Opportunities/ESTCP-Solicitations/Environmental-Technologies->

Solicitation.

## > Upcoming Live Internet Seminars

**Superfund Research Program (SRP) Research In Progress - Biogeochemical Interactions Grantees, Session I: Biogeochemical Factors Impacting in situ Remediation of Metals and PAH Mixtures - February 2, 2015, 1:00PM-3:00PM EST (18:00-20:00 GMT).** This session will feature presentations from Michael Unger and Aaron Beck at the Virginia Institute of Marine Science, James Ranville at the Colorado School of Mines, Heileen Hsu-Kim at Duke University, and Upal Ghosh at the University of Maryland Baltimore. For more information and to register, see <http://clu-in.org/live>.

**ITRC Soil Sampling and Decision Making Using Incremental Sampling Methodology Parts 1 and 2 - February 3 and 5, 2015.** This 2-part training course along with ITRC's Web-based Incremental Sampling Methodology Technical and Regulatory Guidance Document (ISM-1, 2012) is intended to assist regulators and practitioners with understanding the fundamental concepts of soil/contaminant heterogeneity, representative sampling, sampling/laboratory error and how ISM addresses these concepts. Through this training course you should learn: basic principles to improve soil sampling results, systematic planning steps important to ISM, how to determine ISM Decision Units (DU), the answers to common questions about ISM sampling design and data analysis, methods to collect and analyze ISM soil samples, the impact of laboratory processing on soil samples, and how to evaluate ISM data and make decisions. In addition this ISM training and guidance provides insight on when and how to apply ISM at a contaminated site, and will aid in developing or reviewing project documents incorporating ISM (e.g., work plans, sampling plans, reports). For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

**SERDP & ESTCP Webinar Series: Acoustic Methods for Underwater Munitions - February 5, 2015, 12:00PM EST (17:00PM GMT).** Please join the Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) for two presentations on the use of acoustic methods for the detection and classification of underwater munitions. First, Dr. Joseph Bucaro (EXCET, Inc. and the Naval Research Laboratory) will discuss the use of sonars to search for, detect and classify unexploded ordnance (UXO) in underwater environments. He will be followed by Dr. Kevin Williams (University of Washington) who will provide a perspective on ongoing efforts associated with low frequency acoustic scattering of underwater UXO and its use in classification. For more information and to register, see <https://serdp-estcp.org/Tools-and-Training/Webinar-Series/02-05-2015>.

**SRP Research In Progress - Biogeochemical Interactions Grantees, Session II: Biogeochemical Factors Impacting in situ Remediation of Chlorinated Contaminants - February 9, 2015, 1:00PM-3:00PM EST (18:00-20:00 GMT).** This session will feature presentations from Edward Bouwer at Johns Hopkins University, Lisa Alvarez-Cohen at the University of California, Berkeley, Jay Gan and Daniel Schlenk at the University of California, Riverside, and Frank Loeffler at the University of Tennessee. For more information and to register, see <http://clu-in.org/live>.

**ITRC Use and Measurement of Mass Flux and Mass Discharge - February 10, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).** The ITRC technology overview, Use and Measurement of Mass Flux and Mass Discharge (MASSFLUX-1, 2010), and associated Internet-based training provide a description of the underlying concepts, potential applications, description of methods for measuring and calculating, and case studies of the uses of mass flux and mass discharge. This Technology Overview, and associated Internet-based training are intended to foster the appropriate understanding and application of mass flux and mass discharge estimates, and provide examples of use and analysis. The document and training assumes the participant has a general understanding of hydrogeology, the movement of chemicals in porous media, remediation technologies, and the overall remedial process. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

**ITRC Groundwater Statistics for Environmental Project Managers - February 12, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).** Statistical techniques may be used throughout the process of cleaning up contaminated groundwater. It is challenging for practitioners, who are not experts in statistics, to interpret, and use statistical techniques. ITRC developed the Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training specifically for environmental project managers who review or use statistical calculations for reports, who make recommendations or decisions based on statistics, or who need to demonstrate compliance for groundwater projects. The training class will encourage and support project managers and others who are not statisticians to: use the ITRC Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) to make better decisions for projects; apply key aspects of the statistical approach to groundwater data; and answer common questions on background, compliance, trend analysis, and monitoring optimization. ITRC's Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training bring clarity to the planning, implementation, and communication of groundwater statistical methods and should lead to greater confidence and transparency in the use of groundwater statistics for site management. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

**ITRC Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management - February 17, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).** Chemical contaminants in soil and groundwater can volatilize into soil gas and migrate through unsaturated soils of the vadose zone. Vapor intrusion (VI) occurs when these vapors migrate upward into overlying buildings through cracks and gaps in the building floors, foundations, and utility conduits, and contaminate indoor air. If present at sufficiently high concentrations, these vapors may present a threat to the health and safety of building occupants. Petroleum vapor intrusion (PVI) is a subset of VI and is the process by which volatile petroleum hydrocarbons (PHCs) released as vapors from light nonaqueous phase liquids (LNAPL), petroleum-contaminated soils, or petroleum-contaminated groundwater migrate through the vadose zone and into overlying buildings. The ITRC Technical and Regulatory Guidance Web-Based Document, Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management (PVI-1, 2014) and this associated Internet-based training provides regulators and practitioners with consensus information based on empirical data and recent research to support PVI decision making under different regulatory frameworks. The PVI assessment strategy described in this guidance document enables confident decision making that protects human health for various types of petroleum sites and multiple PHC compounds. This guidance provides a comprehensive methodology for screening, investigating, and managing potential

PVI sites and is intended to promote the efficient use of resources and increase confidence in decision making when evaluating the potential for vapor intrusion at petroleum-contaminated sites. By using the ITRC guidance document, the vapor intrusion pathway can be eliminated from further investigation at many sites where soil or groundwater is contaminated with petroleum hydrocarbons or where LNAPL is present. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

**ITRC Environmental Molecular Diagnostics: New Tools for Better Decisions - February 19, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).** Environmental molecular diagnostics (EMDs) are a group of advanced and emerging analytical techniques used to analyze biological and chemical characteristics of environmental samples. Although EMDs have been used over the past 25 years in various scientific fields, particularly medical research and diagnostic fields, their application to environmental remediation management is relatively new and rapidly developing. The ITRC Environmental Molecular Diagnostics Fact Sheets (EMD-1, 2011), ITRC Environmental Molecular Diagnostics Technical and Regulatory Guidance (EMD-2, 2013) and this companion Internet-based training will foster the appropriate uses of EMDs and help regulators, consultants, site owners, and other stakeholders to better understand a site and to make decisions based on the results of EMD analyses. At the conclusion of the training, learners will be able to determine when and how to use the ITRC Environmental Molecular Diagnostics Technical and Regulatory Guidance (EMD-2, 2013); define when EMDs can cost-effectively augment traditional remediation data sets; and describe the utility of various types of EMDs during remediation activities. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

**NARPM Presents...The Elements of Analytical Laboratory Data Quality - February 24, 2015, 1:00PM-3:00PM EST (18:00-20:00 GMT).** This two hour training course for RPMs, OSCs, data validators, and other users of analytical laboratory data will focus on the critical elements that must be considered when documenting the quality and usability of data produced by the analysis of samples from contaminated waste sites. Critical elements discussed in the course include: chain-of-custody; proper sample collection, storage, and preservation; methods and SOPs for preparation and analysis; documentation of processes that affect samples; documentation of the peer review process; and quality control and data validation guidelines. Some make assumptions about analytical laboratory data quality, while others leave nothing to chance. The basic process of data review is discussed in detail, and several tools that have been developed and are in use by EPA to enhance and document this process are also presented. For more information and to register, see <http://clu-in.org/live>.

**Military Munitions Support Services - Advanced Classification - February 26, 2015, 1:00PM-4:30PM EST (18:00-21:30 GMT).** This will be a Military Munitions Support Services seminar with subject matter experts discussing the latest developments in advanced geophysics classification at munitions properties. For more information and to register, see <http://clu-in.org/live>.

**Adaptation of Superfund Cleanup to Climate Change - April 1, 2015, 2:00PM-4:00PM EDT (18:00-20:00 GMT).** This webinar will provide an overview of climate change vulnerability analyses and adaptation at contaminated sites. In some circumstances climate change may result in vulnerabilities in the protectiveness of contaminated site remedies. The course focuses on how such a vulnerability may be better understood and on the means of achieving increased remedy resilience through adaptation measures. The course builds upon a general understanding of the Superfund process, but is relevant to most cleanup programs. By taking the

course, participants will gain a better understanding of the following topics: overview of Superfund-specific climate change action plan; framing site-specific analyses to understand remedy vulnerabilities throughout the life of a remedy, and of adaptation measures that may increase remedy resilience; tapping existing and relevant information resources when evaluating the potential impacts of climate at Superfund sites; and regional case studies of Superfund sites that have been impacted by a major weather event. For more information and to register, see <http://clu-in.org/live>.

## > New Documents and Web Resources

**Summary of Treatment Technologies for Mining-Influenced Water.** The U.S. EPA Office of Superfund Remediation and Technology Innovation released a report in 2014 that highlights select mining-influenced water (MIW) treatment technologies used or piloted as part of remediation efforts at mine sites. The Reference Guide to Treatment Technologies for Mining-Influenced Water includes short descriptions of treatment technologies and information on the contaminants treated, pre-treatment requirements, long-term maintenance needs, performance, and costs. Sample sites illustrate considerations associated with selecting a technology. Website links and sources for more information on each topic are also included. This online, searchable database lists technologies provided in Appendix A of the Reference Guide to Treatment Technologies for Mining-Influenced Water, which includes summary information for the technologies discussed in the body of the report, as well as additional technologies or products designed as passive or low cost treatment options. View and search technologies at <http://www.clu-in.org/mining/miw>.

**Attenuation Pathways for Munitions Constituents in Soils and Groundwater.** The objective of this report is to provide an overall understanding of the fate and transport of munitions constituents (MCs) in soils and groundwater. The MCs discussed include explosives, propellants, and metals. Recent research findings related to MC attenuation pathways are summarized, along with lessons learned from monitored natural attenuation (MNA) and bioremediation applications for MC at Department of Defense and other sites. The scope of this report includes MC issues; physical, chemical, and biological attenuation pathways; technology applications; and case studies (January 2015, 81 pages). View or download at <http://clu-in.org/EXWC-EV-1503>.

**A Review of Green and Sustainable Remediation (GSR) Practices at NAVFAC Environmental Restoration Sites.** A review was conducted to assess the application of GSR metrics at 60 Navy and Marine Corps sites nationwide. The case study information obtained was used to identify and categorize best management practices (BMPs) and their potential impact on the remedy footprint and to track overall trends in the adoption of GSR practices across the Naval Facilities Engineering Command (NAVFAC). Among the sites where a remedy was selected, the results showed 84% of GSR evaluations resulted in the selection of the lowest footprint remedy and 69% resulted in the selection of the lowest cost remedy. The results of the review suggest that GSR evaluations are leading to more sustainable and cost-effective remedies (July 2014, 213 pages). View or download at <http://clu-in.org/EXWC-EV-1439>.

**Technology Innovation News Survey Corner.** The Technology Innovation News Survey contains market/commercialization information; reports on demonstrations, feasibility studies and research; and other news relevant to the hazardous waste

community interested in technology development. Recent issues, complete archives, and subscription information is available at <http://clu-in.org/products/tins/>. The following resources were included in recent issues:

- Field Demonstration of Zerovalent Iron Treatment Technology in Parker Brothers Arroyo: Status Report
- In Situ Bioremediation Pilot Test at the 500 Ramp Area
- Use of a Carbon Amendment to Reduce Bio-Uptake of Mercury in a South River Floodplain Pond: Technical Briefing Paper
- International Processes for Identification and Remediation of Contaminated Land
- Remediation of TCE Contaminated Groundwater Using Permeable Reactive Barriers
- Measuring Vapor Intrusion to Estimate Underground Contamination
- Gasworks Profiles
- Advancing Sustainable In Situ Remediation for Contaminated Land and Groundwater (ADVOCATE)

**EUGRIS Corner.** New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 16 resources, events, projects and news items were added to EUGRIS in January 2015. These can be viewed at <http://www.eugris.info/whatsnew.asp>. Then select the appropriate month and year for the updates in which you are interested. The following resource was posted on EUGRIS:

**New ADVOCATE Bulletin.** CL:AIRE has just published a new ADVOCATE bulletin on the plume fringe: a zone of increased potential for biodegradation in contaminant plumes (January 2015, 3 pages). View or download at [http://claire.co.uk/index.php?option=com\\_content&view=article&id=845:advocate-bulletins-and-videos-available&catid=954&Itemid=93](http://claire.co.uk/index.php?option=com_content&view=article&id=845:advocate-bulletins-and-videos-available&catid=954&Itemid=93)

## > Conferences and Symposia

**Groundwater High-Resolution Site Characterization (HRSC), Kansas City, MO, February 24-25, 2015.** This training course focuses on groundwater characterization and discusses (1) the impacts of subsurface heterogeneity on the investigation and cleanup of groundwater and related media, (2) the need for scale-appropriate measurements and adequate data density, and (3) the tools and strategies that are available to overcome the impacts of subsurface heterogeneity. After taking this course, participants will be armed with information that will allow them to improve their subsurface investigation approaches and develop more realistic and comprehensive conceptual site models (CSM). CSMs developed based on HRSC strategies and tools will decrease site uncertainty, improve the remedy selection process for groundwater remedies, and better enable the evaluation, design, and implementation of targeted in situ and ex situ groundwater remedies. The Groundwater HRSC course is an advanced 2-day course. The recommended audience includes EPA, federal, state, tribal and private industry technical project managers, practitioners and other stakeholders involved in groundwater investigation and remediation. For more information and to register, see <http://www.trainex.org/hrsc>.

**REMTEC, Westminster, Colorado, March 2-4, 2015.** The REMTEC Summit

delivers a truly unique platform focused on advancing environmental science and the remediation industry. At this event, participants will hear essential sources of information on technology, application, and policy affecting the restoration of contaminated sites. This year, USEPA staff will present on a variety of topics including Groundwater Remedy Performance and Completion Strategies, Vadose Zone: New Understandings in Contaminant Fate and Transport, and New Life for Physical Treatment Processes and Remedy Enhancement Using Treatment Trains. For more information and to register, see <http://www.remtecsu...>.

**LNAPLs: Science, Management, and Technology - ITRC 2-day Classroom Training, Denver, CO, April 7-8, 2015; Seattle (area), WA, September 15-16, 2015; Austin, TX, November 18-19, 2015.** Led by internationally recognized experts, this 2-day ITRC classroom training will enable you to develop and apply an LNAPL Conceptual Site Model (LCSM), understand and assess LNAPL subsurface behavior, develop and justify LNAPL remedial objectives including maximum extent practicable considerations, select appropriate LNAPL remedial technologies and measure progress, and use ITRC's science-based LNAPL guidance to efficiently move sites to closure. Interactive learning with classroom exercises and Q&A sessions will reinforce these course learning objectives. For local, state, and federal government; students; community stakeholders; and tribal representatives, ITRC has a limited number of scholarships (waiver of registration fee only) available. For more information and to register, see <http://www.itrcweb.org/training>.

**Registration Now Open! 2015 National Brownfields Training Conference, Chicago, IL, September 2-4, 2015.** Brownfields 2015 promises something for all levels of stakeholders and practitioners. The conference program includes speakers, discussions, mobile workshops, films, and other learning formats that are calibrated to provide you with case study examples, program updates, and useful strategies for meeting your brownfield challenges head on. For more information and to register, see <http://www.brownfieldsconference.org/en/registerinfo>.

**NOTE: For TechDirect, we prefer to concentrate mainly on new documents and the Internet live events.** However, we do support an area on CLU-IN where announcement of conferences and courses can be regularly posted. We invite sponsors to input information on their events at <http://clu-in.org/courses>. Likewise, readers may visit this area for news of upcoming events that might be of interest. It allows users to search events by location, topic, time period, etc.

If you have any questions regarding TechDirect, contact Jeff Heimerman at (703) 603-7191 or [heimerman.jeff@epa.gov](mailto:heimerman.jeff@epa.gov). To unsubscribe, send a blank email to [leave-1530684-1971462.5a18c01033774311bace13a7df63cb2f@lists.epa.gov](mailto:leave-1530684-1971462.5a18c01033774311bace13a7df63cb2f@lists.epa.gov). Remember, you may subscribe, unsubscribe or change your subscription address at <http://clu-in.org/techdirect> at any time night or day.

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